DOCUMENT RESUME

ED 301 352 PS 017 684

AUTHOR Verteramo, Vikkie R.
TITLE The Development of Children's Drawings: An Annotated Bibliography.
PUB DATE Jul 88
NOTE 37p.; Exit Project, Indiana University at South Bend.
PUB TYPE Information Analyses (070) -- Reference Materials - Bibliographies (131)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Age Differences; Annotated Bibliographies; *Childrens Art; Developmental Stages; *Freehand Drawing; Literature Reviews; Perception; Sex Differences; Teaching Methods
IDENTIFIERS *Developmental Patterns

ABSTRACT

Literature on children's drawing was reviewed for the purpose of illuminating issues of developmental stages, differences in development, perceptual problems, and instructional methods that influence learning in children's drawings. A glossary of terms used in the literature was compiled. Conclusions were drawn from the studies reviewed with a view toward making recommendations to educators that would contribute to setting reasonable expectations for children's drawing. A total of 31 studies were reviewed, cited, and annotated. It was concluded that the research indicates that: (1) children pass through different stages of development in their drawings; (2) strategies used by children for drawing become more complex as children grow older; (3) children depict spatial relationships in a variety of ways; and (4) methods instructors use to help children draw include self-instructed training and stimulation through verbal, graphic, or sensory means. It is recommended that teachers: (1) identify the basic developmental stages of their students and set appropriate expectations; (2) observe children as they plan and execute their drawings, and compare current and previous work to assess growth; (3) provide activities that encourage children to draw more often; and (4) use a variety of instructional methods in presenting drawing activities. (RH)

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THE DEVELOPMENT OF CHILDREN'S DRAWINGS: AN ANNOTATED BIBLIOGRAPHY

by

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Submitted in partial fulfillment of the requirements

for the course S-591 -- Exit Project

Indiana University at South Bend

July 1988

PS 017684

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ACKNOWLEDGEMENTS

The research of this paper could not have been carried out without the help and support of the following people. It is with sincere appreciation that this writer wishes to thank them. Susan Hood for the encouragement to pursue the topic and giving of her time, a list of authors and literature. A friend, Carol Majewski, and sister, Karen Wcisel, for proofreading. Daughters, Melissa and Chris for hours of babysitting. The Verteramo family for giving up their time. Dr. DuVall and Indiana University of South Bend for setting the requirement; otherwise the writer would never have made the time to deal with the subject of interest and would have missed out on all that has been learned.

INTRODUCTION

"Every child draws; ...there seems to be a need to draw: a need to represent parts of the environment that the child has come in contact with, and a need to put down his own thoughts, a need to clarify the relationship between objects and people, a need to express himself in a tangible way."

(Lowenfeld; Brittain, 1982:48)

This study of literature has dealt with the development of children's drawings. The stages that children pass through have been examined by educators.

"A number of studies have attempted to document the various developmental stages...these sometimes give different names to the stage...not all children move from one stage to another at exactly the same time..."

(Lowenfeld; Brittain, 1982:40)

Children produced drawings that were similar in nature, yet very different. If those variations were due to developmental differences, educators may have questioned whether they could have controlled drawing development.

"It is easier to see the changes in childrens drawings as they grow than it is to explain why these changes occur."

"...it is the value of these experiences to the child that is important."

(Lowenfeld; Brittain 1982:42)

When children made drawings based on objects they had seen, those representations provide information about their perceptual abilities as well as their artistic skills.

> "Between the ages of two and seven, the child's perception of objects is fairly accurate, while the perceptual (imitiative) activity which constitutes the image is not yet fully developed and yields a relatively static mental image."
>
> (Golomb, 1977:181)

Once the drawing process had begun, adult intervention occurred. Teachers made attempts to guide children with methods that influenced the outcome of their drawings.

> "...it is the teacher's role to provide the circumstance, the motivation, the material in such a way that the experience has to happen. ...It is important to start where the child is and broaden his store of experiences."
>
> (Lowenfeld; Brittain 1982:48)

> "The teacher of the elementary grades must be prepared, then, to find pupils at many stages of development and to see pupils progress at different rates."
>
> (Gaitskell 1982:151)

The justification for art education research was to provide educators with informational resources relating to children's drawings. The annotated bibliography was designed to supply that

information on developmental stages, developmental differences, perceptual awareness and methods of instruction that aided in learning to draw. After raising teacher awareness, conclusions were drawn, recommendations made. Following an increased insight of children's drawing, teachers could then begin to select tasks that were stage appropriate, incorporating a variety of methods to instruct children in drawing.

STATEMENT OF THE PROBLEM

The awareness of the student's developmental level and the planning of appropriate tasks present a problem for the art educator. This study has dealt with the stages of development, developmental differences, perceptual problems, and instructional methods that influenced learning in children's drawings.

PURPOSE OF THE STUDY

The purpose of this study was to research the literature dealing with the drawings of children. To determine if there were: developmental stages, differences in development, perceptual problems, and instructional methods that influence learning in children's drawings. A glossary list of terms was included. Conclusions were drawn from the studies with the intention of making recommendations to educators that would contribute to setting reasonable expectations for children.

ORGANIZATION

The study was divided into four areas of concern: developmental stages of drawings, developmental differences, perceptual problems of spatial relationships, and instructional methods that influence the learning in children's drawings. The annotations were arranged in categorical order. Conclusions were drawn and recommendations presented.

LIMITATIONS

Information gathered for this study was limited to research done with normal boys and girls of average intelligence in the age range of 0-17. The literature was selected from books, periodicals, and ERIC documents. The use of numerous studies and replicated studies were limited to availability and time restraints.

GLOSSARY

Abstract expression -- Characterized by a lack of representation and by an emotional approach to concept and execution (Myers, 1969:) Represented by "cross-model similarity: (e.g. big for loud, small for quiet)" (Ives, 1984:158).

Array -specific -- "younger children...representing the spatial (visual world) relationships between the objects in the array" (Davis, 1984:452).

Base line -- "The child constructs lines in order to impose some degree of spatial organization upon the elements of his drawing." "In landscape drawings, they can represent its surface (usually the ground), and can provide a stand-line upon which all the elements are ordered." (Hargreaves and Others, 1981:12).

Blind contour -- The student fixes his/her eyes on the outline of the model or object, drawing the outer edge very slowly with a steady continuous line without lifting the pencil from the paper and without looking at the paper. (Mayer, 1969:92)

Canonical error -- Not conforming to the rule for drawing the object. Example: Not drawing the handle on the side of the cup.

Content expression -- A way to depict expressive qualities

metaphorically. Example: A broken swing expresses sadness. (Ives, 1984:152)

Conventional man -- Drawing of a man that consists of a head, trunk, arms and legs.

Copying from life -- To draw objects while looking at them.

Design composition -- The selection and arrangement of lines, shapes, and angles which express a spatial relationship. (Mayer, 1969:109)

"Drawing machine" (369) -- "This consists of a vertical sheet of clear plastic and an open sight fixed at the spectator's viewpoint. By applying one eye to the sight and drawing round the outlines of the scene as perceived through the plastic, an accurate drawing in perspective was prepared. This drawing was referred to as the 'canonical drawing'..." (Willats, 1977:369)

Expressive qualities -- The representation of a mood (sadness) or non-visual quality (quietness) in a drawing. (Ives, 1984:153)

Figural differentiation -- Part of a scoring system that rated drawings of a human, tree and flower from simple to complex.

Graphic form -- Representation of shapes on a flat surface.

Graphic strategics -- Representational plannings on a flat surface.

Literal expression -- Representation of the exact meaning. Example: happiness depicted as a smile.

Modeling -- "Refers to an initiative learning situation in which the behavior to be learned is acted out by the teacher, with or without accompanying verbal instructions...a hands-on demonstration." (Rush, 1980:6)

Oblique system -- An object is represented with two of its areas paralleled to the picture plane. (Mayer, 1969:264)

Occlusion -- A drawing that shows only that object which was near to the child." (Light; Humphreys, 1981:528)

Orthographic system -- "Orthogonals cannot be depicted, because the projections of edges normal to the picture plane appear as points." (Willats, 1977:368)

Perspective -- "A system of representing three-dimensional objects on a two-dimensional surface so that the effect is the same as if the actual scene were viewed from a given point, objects receding in depth with the same space relationships." (Mayer, 1969:289)

Production problem -- "The compositional difficulties inherent in this most difficult spatial task...drawing of a tadpole man." (Freeman, 1977:349)

Projection system -- Drawing systems that represent objects in perspective.

Schematic figure -- A drawing of an human figure that has resemblance to the real person. The basic figure stays the same, but variations in dress, hair, poses are sometimes used.

Scribbles -- To draw quick lines of undefined shapes.

Spatial composition -- The organization of space in a drawing with objects drawn above, below or beside each other.

Stages of development -- "A predetermined growth pattern." "Each stage of development follows the preceding one in logical sequence and each stage is a springboard for the next." (Lowenfeld; Brittain 1982:26)

Suzuki Method - "highly structured, role-type lessons are taught making liberal use of rhythm and movement." (Platten; Arimitsu, 1982:223)

Tadpole man -- Showing a man that consists of a head, arms and

legs, no trunk.

Three-dimensional object -- An object that is not flat, but shows depth.

Two-dimensional -- A flat surface without depth.

Vertical oblique -- Lines that lie at an oblique angle that appear vertical.

View-specific (visual field) -- "Older children represent the objects as they appear from the viewer's position" (Davis, 1984:452)

Visual forms -- Images of shapes.

Visual world (array-specific) -- Relationship which "represent the spatial relationship obtained between the objects." (Light; Humphreys 1981:522)

ARE THERE STAGES OF DEVELOPMENT IN CHILDREN'S DRAWINGS?

Mendelowitz, Daniel M. Children Are Artists. Stanford University Press. Stanford, California. 1963.

Mendelowitz researched the stages of development in children's drawings up to age twelve. Starting with "The Scribbler" (7) descriptive details of the characteristics of the stages and how the children performed it were accompanied by a collection of drawings. Children's verbalizations about their work as it was produced were also recorded. A summary for each stage was offered as well as an annotated bibliography of recommended references to aid in teaching art.

Kellogg, Rhonda with O'Dell, Scott. The Psychology of Children's Art. CRM Random House, 1967.

This collection of photographs of children's drawings illustrated Kellogg's discovery. "That all children everywhere draw the same things in the same way at the same age." (11) Examining the drawings of children from the city, rural areas, different times in history showed the "artistic impulse is universal". (11) Works of preschool and grade school children were studied and found to progress through stages of development. Starting with scribbling at about age two, those stages were sequential in progression. The findings of various developmental levels (stages) were supported throughout the book by the examples of children's art works labeled by sex and age.

Matthews, John. "Children Drawing: Are Young Children Really Scribbling?" Early Child Development and Care. 18:1-2, 1-39, 1984.

This longitudinal study of children 0-7 years of age supported by cross-sectional and longitudinal studies of other children 0-7 years of age examined how children experimented with symbols before and during the scribbling stage. Film, video tapes, and audio tapes were used for the purpose of recording the child's intention and meaning in the drawings. Evidence showed that early symbolic representations were meaningful experiments and had occurred at the beginning of marking behavior. That being the foundation of drawing, the identification and evaluation of those symbols would be necessary for appropriate teaching to follow.

Golomb, Claire. "Representation and Reality: The Origins and Determinants of Young Children's Drawings." Paper presented at the National Symposium for Research in Art: Learning in Art, Representation and Metaphor. University of Illinois, Urbana, Ill. October 8, 1980.

A look at the developmental pattern of scribbling in young children led Golomb to investigate whether or not children in the scribbling stage were able to make representational drawings. The 250 children, age two to seven, were asked to make a free drawing of their choice and than pairs of drawings: "mommy and baby, bird and fish" (38) etc. Those who had produced scribbles, a prerepresentational stage, were then directed to draw a series of objects. The major finding was that children who drew the whirling unruly lines were able to produce at least one drawing (on request or dictation) that used representational forms. The fact that 39 percent of two year olds and 80 percent of three year olds were able to produce representational forms indicated that giving detailed instructions could have a significant impact on the drawings.

Brittain, W. Lambert and Chien, Yu Chin. "Effect of Materials on Preschool Children's Ability to Represent a Man." Perceptual and Motor Skills. 51-3, 995-1000. December 1980.

The authors reviewed and evaluated seven tasks which required children to draw or assemble human figures. Each of the 61 children, age 2.6 to 5.8 years, were asked to make a person using: 1) pencil and paper, 2) 28 big and small precut geometric shape (circles, squares, rectangles) 3) 6 geometric shapes, 4) 28 precut shapes of several body parts or clothes, 5) 6 precut body parts, 6) a piece of clay, 7) premade figure from task 5 and asked to name the parts. Three judges separated and scored the categories and found that the easiest was task 5 and the most difficult was task 3. The individual child's ranking remained similar over all tasks. Older children did best while boys and girls performed equally on age levels. Based on these findings, the material used did not have a significant effect on the performance. The authors believed it was a cognitive problem of comprehension that lines and shapes symbolize parts of the figure which developed between age three and four.

Freeman, N.H. "Do Children Draw Men with Arms Coming Out of the Heads." Nature. 254, 416-417, 1975.

Freeman studied human figure drawings of 140 children ages two, three, and four to assess the hypotheses that children: (1) attach the arms to the head, omitting the trunk, (2) attach the arms to the head even though the child has a rule expressing arms go on the trunk, (3) the head and trunk are perceived and the rule attach the arms to the trunk is carried out. (410) The children were first asked to free draw a man, then to finish a drawing when provided with only the head, and last to finish drawing when provided with sets of circular heads and trunks of varied sizes. The location of the limbs were noted. Groups were divided according to the free drawing, the results being a conventional man (group M), a tadpole man (group T), or scribbles (group S). Group M were older. Group M and T stayed consistent in their drawing type when given only the head. When given only a head, 20 of the 35 scribblers produced tadpole men and 15 produced conventional men. In series drawings, group M consistently attached arms to the trunk. Group T and S results were similar to each other. The larger circle, head or trunk, was the usual choice of arm placement for group T. According to calculation of Cochran's Q the limb attachment for group T was significant but could not be certain for group S. The variation in drawing of group T lead to the belief that the hypotheses are not upheld because children did not instinctively attach arms to the trunk when provided with one or to the head. Their response to the head-trunk was controlled by the size relationship between them. Also noted, 80 percent of group T drew in the order of head-legs-arm, not head-trunk-arms-legs, as the group M. This lead Freeman to the belief that the tadpole men were not a conceptual problem, but a product of production problems.

Freeman, N.H. and Hargreaves, S. "Directed Movements and the Body-Proportion Effect in Preschool Children's Human Figure Drawing." Quarterly Journal of Experimental Psychology. 29, 227-235, 1977.

This experiment tested the plausibility that children could draw arms in the right location if they were directed to draw body parts on the head and trunk first. A randomly arranged booklet of incomplete drawings was presented to 80 children between the age of two and four. The groups had been pretested and divided into tadpole-drawers (mean age three years seven months) and conventional drawers (mean age four years four months). In the completion task of the figure drawings, the round head and trunk were of various sizes. Standard directions were given to all children. The groups were given localized-cues to draw the parts of the body in a particular order starting with either the arms, navel, nose, or ears. The movement of the pen was recorded to see where the child went to draw the arms after the initial cue. Tadpole drawers attached the arms to the head when it was larger than the trunk while conventional drawers were less concerned by head-trunk ratio. The head-trunk ratio had more effect on placement of arms than the directed placement of the pen to the body parts. Directing the pen to body parts did not aid tadpole-drawers to position the arms leading to the failure of the hypothesis.

ARE THERE DEVELOPMENTAL DIFFERENCES THAT AFFECT CHILDREN'S DRAWINGS?

Ives, S. W. "The Development of Expressivity in Drawings." British Journal of Educational Psychology. 54:2, 152-59, June 1984.

Research looked at expressive qualities in 128 children's drawings. Line and tree drawings were scored for the expression of a psychological mood (happy/sad) and the strategy used to specify it: either abstract, literal, or content expression. The ability to express moods was more accurate as children got older with the highs at age seven (70.3 percent) and thirteen (81.3 percent). The characterization of the tree reached 100 percent accuracy at age seven, but the development in expressive qualities did not peak (92 percent) until age sixteen. Abstract drawings of literal expression is not necessary to define moods. Abstract expressions were used in some form at all ages and did not decline. Literal expression decline in use with age. Content expression was the most complex because it included representation and expression and did not appear until age seven but was used more after age sixteen. In conclusion, expression qualities can be portrayed as early as four years of age but the strategy used to depict it increased in complexity as the child grew older.

Golomb, Clair, and Farmer, Debbie. "Children's Graphic Planning Strategies and Early Principles of Spatial Organizations in Drawing". Studies in Art Education, 24:2, 86-100, 1983.

An investigation of the graphic planning strategies employed by 75 children age range 3.0 to 7.11 looked at the sequence and organization used to produce a drawing. Presented one at a time, in a random order, the themes consisted of drawing: a family, a birthday party, a garden, and children playing. The following compositional variables were used in scoring criteria: spatial composition, directional patterns, location, and figural differentiation. Results were discussed in terms of age range as it related to sequence and organization. Findings in sequence included the predominance of the human figure drawn from top to bottom while flowers and trees were from bottom to top. Four year olds lacked a directional preference, used most of the page to draw a figure centering it horizontally on the page. Six and seven year olds more often used a left-right sequence with symmetry dominating their drawings. Different themes produced different compositional results, progressing to more complex strategies used as age and development increased.

Richards, Martin and Ross, Helen E. "Developmental Changes in Children's Drawings." British Journal of Educational Psychology. 37, 73-80, 1967.

To trace developmental differences in normal children, thirty boys and girls for each year of age five through fourteen, drew a cat and kittens in a normal art period of 25 minutes. The drawings were scored on six points then divided by age and sex. Trends were the same for both sexes and peaked at age nine and fourteen. All measures changed with age and sex and reversals were around age twelve. More differences were found between younger boys and girls. The study showed a change with age and sex on all six points: (1) color, (2) unrealistic color, (3) area of drawing, (4) background, (5) strips of sky and ground, (6) outlining.

McNiff, Karen. "Sex Differences in Children's Art." Journal of Education. 164:3, 271-89, Summer 1982.

The author analyzed a collection of 1800 drawings spontaneously produced by 26 boys and girls aged six through eight over a six month period. Similarities and differences in themes and subject matter were recorded. The contrasts presented symbolic forms which expressed the child's thoughts. The themes of the girls were people, designs, plants and animals, and holidays. The boys drew themes which contained power and conflict presented with struggles, battles, outer space, monsters, sea animals (whales and sharks), sports, and machines (cars, motorcycles). Clearly, the drawings produced by boys and girls expressed an interest in subject matter very different from one another.

HOW DO CHILDREN PERCEIVE SPATIAL RELATIONSHIPS OF THE OBJECTS THEY DRAW?

Hargreaves, David J.; and Others. "The Air Gap Phenomenon in Children's Landscape Drawings." Journal of Experimental Child Psychology. 32:1, 11-20, August 1981.

Three structured experiments were designed to examine the "Air Gap Phenomenon" (11) to see if context cues would alter the drawing task. A pilot study was done with two groups of mixed six, seven and eight year olds. The free drawing group was asked to draw a house, bird, and sun on a white sheet of paper. The cued drawing group was asked to draw the same thing on a paper that was blue on the top half and green on the bottom half. Results were scored on location of the three items. A greater number of the cued group placed the sun and bird in the sky (24/25 vs. 13/21) and the house on a baseline (23/25 vs. 8/21). The free group produced mostly drawings with the sun and bird located in the sky strip or in the air gap. The 38 children in experiment one, and 77 children in experiment two, replicated the pilot study with an addition of a third drawing consisting of a strip of blue on the top of the paper and a strip of green on the bottom of the paper and white paper in between to give an additional cued task. The results reflected what had been found in the pilot study: free drawings produce air gaps and blue-green cueing tended to modify it. This is seen as a production error by the authors rather than a deficit in the child's understanding of the visual world.

Davis, Alyson M. "Noncannonical Orientation without Occlusion: Children's Drawings of Transparent Objects." Journal of Experimental Child Psychology. 37, 451-462, 1984.

The children in the present study were asked to draw transparent objects. In experiment one, children four to seven years old produced drawings of a single glass with a handle turned away from them, or pair of glasses, one handle away from them and one at the side. In experiment two, the single glass was filled with milk changing its visual appearance. When the single glass drawing task was presented first, 67 percent drew the handle as a canonical error. When followed by the paired glass task, only 42 percent made the same error and 50 percent made view-specific transparent drawings. When the single glass task was presented second, only 33 percent made a canonical error. This showed the order of presenting the single glass task made a difference in the response, while the paired glass did not. In experiment two, the children were asked to draw a single glass which was set in front of them and filled with milk. They also drew the same paired glass task from experiment one. Drawings were scored on handle position and milk inclusion. The order of task presentation was examined showing no significant effect of single glass task but the paired glass task had fewer errors when presented second. Seeing the milk poured into the glass resulted in fewer canonical errors although it was only represented 33 percent of the time when presented first. Clearly the results showed young children can be cued to draw transparent objects in a view-specific mode. The use of paired glass tasks or making the transparent glass opaque were visual cues in aiding correct representation of the object.

Lewis, Hilda Present. "Children's Drawings of Cubes with Iterative and Non-Iterative Sides." Studies in Art Education. 2:3, 141-46, Spring 1985.

Children in grades K through 5 were randomly asked to represent a plain cube and a cube with designs on each of its four sides in a drawing. The cubes were placed on the desk so the 524 subjects had a 45 degree angle view. Existing classification for drawing cubes did not match the data obtained, therefore a new system of seven categories was developed. The representation of the plain cube as a square was greater in all grades than the designed cube. The representation of perspective, successful or not, was greater for the plain cube than the design cube and did not appear until grade four. In drawing the designed cube more than one side was shown with more frequency than the plain cube although it was drawn showing two or more sides, joined or not. In conclusion it was more difficult for children to draw the designed cube than the plain cube.

Ives, S.W. "The Use of Orientations in Children's Drawings of Familiar Objects: Principals versus Percepts." British Journal of Educational Psychology. 50:3, 295-96, November 1980.

A previous investigation suggested that young children made drawings consistent with graphic principles even when the model in front of them was opposite of that rule. Thirty-six children were asked to draw four objects familiar to them. The model of a toy (car, man, house, horse) was placed by the experimenter or the child, in a frontal or side position. All four objects were drawn in a single 30-minute session. Only 33 percent of the kindergarten children looked at the objects while drawing them, but all of the second and fourth graders looked at them, reproducing many details. Regardless of the viewing position of the toy, the house and the man were drawn in a frontal position and the car and the horse in a side position. The free-choice placement of the objects by the child followed the drawing pattern. The findings are consistent with previous findings that children will change the orientation of the object drawn to fit a standard form.

Light, P.H.: Humphreys, J. "Internal Spatial Relationships in Young Children's Drawings." Journal of Experimental Child Psychology. 31:3, 521-30, 1981.

Research was conducted to test the hypothesis that children can perceive array-specific relationships (visual world) but fail to produce view-specific (visual field) drawings. The 97 children age five to eight were asked to draw an array of colored pigs/blocks setting in four different orientations with the same colored one always closest to them. The experimenter stated they would be set in a "special way" and "make the best drawing you can". (524) Nearly all children drew lateral arrangements in the horizontal position they were in. Depth arrangements were drawn one of three ways. Horizontal (side by side) drawings were found in 41 percent of the younger group and 8 percent in the older group. Vertical (side view) drawings showed the height of objects and were drawn with the nearer object below the other but showed no age trends. Most often used by older children: occlusion, showed only the nearer object, often as an end view. A few attempted partial occlusion. The elected form of drawing the array changed with age. The most common form used by younger children was the horizontal side by side view of which 80 percent showed the two objects related correctly to each other. While this gives us information about how the array looks (array-specific) it does not indicate the child's position when drawing it (view-specific). The shift of older children drawing the nearer objects gives view-specific information. While the younger child shows no concern for it.

Liben, Lynn S; Golbeck, Susan L.G. "Sex Differences in Performance on Piagetian Spatial Tasks: Differences in Competence or Performance?" Child Development. 51, 594-97, 1980.

The authors reviewed Piagetian research on horizontal (water-level) and vertical (plumb-line) tasks which showed a high correlation in males, but not females. To test whether performance was based on competence, 240 children in grades 3, 5, 7, 9 and 11 were asked to perform versions of the tasks. In physical tasks children were asked to draw water levels and plumb lines after observing a tilted glass of water or a light bulb cord in a van going up hill. Nonphysical tasks required drawing straight lines across or up and down in titled rectangles. It was predicted they would do better on the nonphysical tasks, and they did. The older children did better than the younger. Males did better overall than females, indicating that performance accounted for some difficulties. There appeared to be competence difficulties between males and females.

Perner, Josef; Kohlmann, Fonana; Wimmer, Heinz. "Young Children's Recognition and Use of the Vertical and Horizontal in Drawings." Child Development. 55, 1637-45, 1984.

Previous studies of children's master of vertical/horizontal in their drawings were concluded to be a concept difficulty. The present study contrasted a selection response and their drawing response. In the drawing part, three to seven year old children persisted in copying the vertical/horizontal lines perpendicular to the oblique baseline. To test if this was a conceptual problem, children were asked to select the correct set of drawings of a tree, a chimney, and water-levels. Even the youngest child selected the correct depiction of the tree and chimney on a slanted surface. Up to age seven there was conceptual difficulty with the water-level task where 33 percent preferred the water-level drawn perpendicular to the sides of the tilted jar. The study offered no answers as to why children drew the vertical/horizontal lines as they did, only that they were able to recognize what was correctly depicted.

Cox, M.V. "One Thing Behind Another: Problems of Representation in Children's Drawings." Educational Psychology. 1:4, 275-87, 1981.

Cox conducted a series of five studies to explore how children represent depth relationships on a two-dimensional surface (275). The study found that if their attention was brought to a model, young children attempted to draw one object behind another. When simple objects were drawn, they were separated on the page and drawn vertical to each other. Even in a selection task, they were chosen that way. Partial occlusion was not represented until at least age eight. When the drawing task was presented as one object partially hiding behind the nearer one, the results brought responses of partial occlusion in drawings and selections. The findings of this study suggested that more explicit instruction produced a more accurate representation.

Light, P.H.; MacIntosh E. "Depth Relationship in Young Children's Drawing." Journal of Experimental Child Psychology. 30:1, 79-87, August 1980.

This study was designed to examine how children handled the problem of representing spatial depth when drawing pairs of opaque funnels or an array of glass jars and a model house. The 64 children of mean age six years ten months produced funnel drawings as separate units in a horizontal or vertical drawing; or as unified units overlapped or enclosed one in the other as an occlusion drawing. In most cases, the nearer funnel was drawn first, and lower on the page than the further funnel. In drawing the glass and the model house, all children produced unified drawings when the house was inside the glass. When the house was placed behind the glass, half the children drew them separately with the glass below the house. The children who drew the house and glass separately had also drawn the funnels separately, showing a consistency in the way these children represented the arrays. The authors discussed these findings as they related to the children's visual world rather than their visual field.

Willats, J. "How Children Learn to Draw Realistic Pictures." Quarterly Journal of Experimental Psychology" 29, 367-382, 1977.

Willats study documented six projection drawing systems used by five to seventeen year olds when asked to draw a table from a fixed position showing occlusion of the objects on it and the table. The children's drawings were compared to the scene drawn by a "drawing machine" (369). There was a high correlation found between the mean age of the subjects and the amount of time spent on the drawing, the system used, and the overlap score. The development of the systems progressed in separate stages. Each one offered new advantages over the old one and became more complex as age increased. The more complex the system used, the more realistic the drawing.

Lee, Monica and Bremner, Gavin. "The Representation of Depth in Children's Drawings of a Table." The Quarterly Journal of Experimental Psychology. 39A, 479-496, 1987.

The previous research by Willats (1977) was replicated in a modified form using a larger sample of 789 children in an age range of 4-14. Correlations Willats found between age and the systems used; however, not all stages, were found to be definite. "By ascertaining the form of projection that is used by the child, the experimenter can identify the 'stage' of depth depiction the child has achieved." (480) These authors suggested that a revision of Willats study was necessary in three areas. They increased the size of subject population, evaluated the system used and the use of partial occlusion separately, and third evaluated the whole table including the legs not just the top. The main finding of the study was that no subjects drew in correct perspective even though they attempted to do so, the oblique system is different from the others, and the otographic and vertical-oblique systems are separate developmental stages. Willats stages of projection systems were not supported by the Lee-Bremner study. They suggested a study of the developmental process of drawing a table could have been studied as that of skill acquisition.

WHAT ARE SOME INSTRUCTIONAL METHODS THAT INFLUENCE LEARNING IN CHILDREN'S DRAWINGS?

Ducum, Paul, "How 35 Children Born Between 1724 and 1900 Learned to Draw." Studies in Art Education. 26:2, 93-103, 1984.

This study aimed to determine how 35 children, born between 1724 and 1900, learned to draw. The predominately male group drew a great deal as children and most became visual artists in their adult careers. A comparison of strategies and themes used most often in their childhood drawings inferred copying from prevalent art of the day was used most frequently. Second most often used was observation of other art being produced. Through biographies and autobiographies, it was learned instructors or family members were influential. No subject learned to draw solely by copying from life. The sample of the study was limited and the author suggested further study should be made to compare children of the past with children of the present in terms of similarity in themes and style.

Platten, Marvin R. and Arimitsu, Rokuroh. "Research Brief--Effects of An Experimental Program on the Quality of Children's Art and Concept Attainment Using a Synthesis of Japanese Music and Art Education Methods." Texas Tech Journal of Education. 9:3, 223-26, Fall 1982.

The research was adapted from the Suzuki Method of teaching music to children and a method of art instruction developed by Yoshio Tamano. The synthesis of these methods were conducted in a United States study using systematic drawing experiences. In their home environment 54 children age four to six and their mothers used 30 prerecorded lessons at their own pace for four weeks. Those children who did "highly directed, sequential, motor-synaesthetic art activities" (225) at home with their mothers, produced much higher quality art products than those who did not have the instruction lessons. The use of copying and tracing was used in this method and did not harm their creative growth as Pariser (1979) also had concluded. This Suzuki/Tamano method was believed by the author to be a "viable method of instruction in art education of young children." (226)

Baker, Joanne E., Winston, Andrew S. "Modifying Children's Creative Drawing: Experimental Analysis and Social Validation of Self-Instructional Procedure." Education & Treatment of Children. 8:2, 115-132, Spring 1985.

Two experiments were conducted to determine if self-instructed training would affect creative behavior in drawing and storytelling tasks. Children who pretested low in diversity and novelty on both drawing and stories were selected. In experiment one, children were trained to model the experimenter in self-instructional training; first, in six sessions of drawing, then six sessions of storytelling. Results after instruction showed definite increase in diversity of content in drawing and storytelling. Experiment two, as in one, asked children to model after the experimenter. To verbalize novel characteristics in nursery rhymes illustrations. They then asked themselves what "I could draw that would be strange or funny or different? What should I draw? (pause) I know! I'll draw..." (123) After five or six sessions, novelty was greater than before. Both experiments had a follow-up assessment at six weeks which showed the self-instructed training was sustained. The findings in this study indicated children who were given self-instructed training in self-verbalization increased their creative behavior and sustained it in diversity and novelty in drawing and storytelling.

deKane, Frances Pizzinin Zepeda. "Young Children's Drawings as Related to Basic Communication Skills." Research Monograph No. 31 Florida University, Gainesville, P.K. Yonge Lab. School, 1980.

Data indicated, in spite of sex, race, or socioeconomic status, children who pictorially represented an idea verbalized more about an experience than those who did not. With a graphic stimuli from an exhibit of South American Indian artifacts, 55 kindergarten children were given the opportunity to express their thoughts on what they had viewed. One group verbalized what they had seen when given a picture of something seen from the gallery trip. The second group was asked to color a predrawn picture. The third group was asked to draw a picture about the exhibit trip. Oral data was recorded for analyzing. Those children who drew their own pictures had more to say about the experience than the other two groups. Results supported the part that free drawing played in expressing ideas verbally. It was felt the children organized their thought while making the drawing. The author stated that drawing should play a bigger role in language arts programs.

Colbert, Cynthia B. "The Relationship of Language and Drawing in Description and Memory Tasks." Studies in Art Education. 25:2, 84-91, Winter 1984.

The objective of this research was to examine how talking about or drawing a three-dimensional object affected the drawing that was made 48-hours later. Responses were recorded on audio tape. The study found that an increase in age significantly affected the verbal and drawn responses. The delayed drawings were more accurate by subjects who had previously talked about the model. The greatest increase in memory scores were produced by those who had both verbally described and drawn the model. The author concluded that drawing from observation helped in the retention of visual information. Based on the findings it was also implied that talking about what was seen before drawing it would improve memory in the accuracy of the drawing. Children should be encouraged to observe and discuss as well as draw objects.

Barr-Johnson, Virginia. "Challenging the Right Side of the Brain", Creative Child and Adult Quarterly. 7:4, 218-25, Winter 1982.

Participants in this study ranged from kindergarten through sixth grade who had no specialized art teacher. The research compared sets of their drawings made before and after a one hour presentation of slides and artifacts of the Orient. The sensory activity resulted in an extensive increase in the use of color, texture, and design composition. Sixth graders (25 percent) made the greatest creative changes while fourth graders (7 percent) the smallest. Girls improved their drawings more than boys. The "arts-centered learning is primarily a function of the visual-spatial creative right side of the brain" (219) and Barr-Johnson concluded this type of activity helped develop the use of the right side of the brain.

Smith, Nancy R. "Copying and Artistic Behaviors: Children and Comic Strips." Studies in Art Education. 26:3, 147-56, Spring 1985.

Copying does not always mean making a complete replica. This research involved the use of inventive behavior in the copying process of comic strips. Children six to thirteen years of age, over a weekly one year period, drew strips for a Comic Book Club. They produced four books to include 164 strips. Many of the themes were modified commercial ones. Schematic figures fashioned after super heroes were drawn on a base line in a static pose. Two original themes the children invented concerned common fears and accidents, and the other was everyday occurrences (drawn by girls 64 percent of the time). The children borrowed from commercial comics but invented original and personal themes. Their artistic behavior was not restricted to replication.

Pariser, David A. "Two Methods of Teaching Drawing Skills." Studies in Art Education. 20:3, 30-42, 1979.

In this research study, Pariser developed two opposing instructional methods to assess the acquisition of drawing skills in elementary children. The blind contour drawing problem of a three-dimensional object was presented to fourth, fifth, and sixth graders. Variations were found between what individuals were able to draw and the perceptual experiences they had. First, second, and third graders copied an enlarged drawing of Durer's woodcut, Rhinoceros. The children emphasized the visual forms they wanted to present in their drawing. The implications of Pariser's findings were discussed but the resolution to the question as to when it is appropriate to teach children to draw from life or the graphic form was not met.

Rush, J.C. "A Comparison of Instructional Methods for Teaching Contour Drawing to Children." Studies in Art Education. 21:2, 6-12, 1980.

The primary purpose of this study was to determine if third graders could learn contour drawing more effectively from modeling or examples and from one or two viewing positions. During instruction students presented with examples were more attentive and eager to draw than those who observed the modeling. Analysis of pretest and postest showed those who received instruction with predrawn examples made a greater gain in accuracy in contour drawing than those who modeled after the instructor. The different view points had no effect on the drawings.

SUMMARY

A review of the research supported the theory that the drawings of children pass through definite developmental stages. Mendelowitz (1963) and Kellogg (1967) began their studies with the scribbling stage. That prerepresentational stage was the basis of Matthews (1984) research of symbolic forms which children first used to express their ideas graphically. Brittain (1980) studied the symbolic use of circles and lines in the representation of the human figure. If directed to perform a specific task, Golomb (1980) found children in the scribbling stage could produce a representational form.

The scribbles and circular forms eventually led to the drawing of the human figures which were first represented as tadpole men. Freeman (1975) investigated the location of limbs on the head and concluded that it was a production problem rather than a conceptual problem. (Freeman 1975:417) The Freeman and Hargreaves (1977) study attempted to cue children away from the head, but it did not alter the way the tadpole-drawers produced figures. Conventional men with a head-trunk-arms-legs sequence were only drawn by older children.

Evidence gathered from research on the sequence of skill development noted that age and sex had significant influence on the strategies and themes of children. Ives (1984) and Golomb; Farmer (1983) found that the complexity of the strategies increased with age. Richards (1967) and McNiff (1982) studies discovered strategies as well as theme variations differed

between boys and girls.

According to the research, children drew spatial relationships in a variety of ways. Hargreaves (1981) and Davis (1984) found children could be cued to draw objects in correct location to each other. Light; Humphreys (1981) revealed that children's drawings were array-specific, but they did not always divulge the position from which they were viewed. Even young children were able to select the correct depiction on horizontal and vertical tasks, but older males were best able to represent those relationships in their own drawings. Depth relationships were also represented more complexly and in a specific manner as children grew older (Willats 1977:480).

The research presented in this paper supported several hypothesis on instructional methods that improve children's learning in drawings. Ducum's (1984) investigation of how 35 adult artist had learned to draw as children, revealed that they had learned by imitating prevalent art, observing the production of art and gaining direct knowledge from instructors and family members. Copying from life as well as from works of art presented a variety of different strategies which they employed in their themes.

Platten (1982) and Baker (1985) studied forms of self-instructed training that increased creative behavior. deKane (1980), Barr-Johnson (1982), and Colbert (1984) researched other methods that influenced the way children learned to draw. Those studies showed that various forms of stimulation helped children

organize their thoughts and developed more accurate drawings. The studies of Smith (1985), Pariser (1979), Rush (1980) explored the copying of cartoons, drawings or other works of art. In each case, the children displayed originality by devoting more attention to the details that interested them.

CONCLUSIONS

Are these developmental stages in children's drawings?

According to research, children do pass through different stages of development in their drawings, starting with scribbling.

Are there developmental differences that affect children's drawings?

There were consistent findings that the strategies used in the sequence of development in children's drawings were more complex as age increased. The themes selected and the problem solving activity varied between boys and girls.

How do children perceive spatial relationships of the objects they draw?

Research of several studies found that children depicted the spatial relationships they viewed in a variety of ways. The use of cueing, to aid children, made a difference in the depiction of those objects. The complexity of the strategies used increased with age.

What are some instructional methods that influence learning in children's drawings?

Several researchers focused on a variety of methods that were successfully used to influence children in learning to draw. Those included self-instructed training and stimulation through verbal, graphic or sensory means.

RECOMMENDATIONS

Based on the research of children's drawings, it is recommended to the educator that:

1. Teachers identify the basic developmental stages of their students and set appropriate expectations.
2. Teachers observe children as they plan and execute their drawings, then compare the growth they have made to previous work they have produced.
3. Teachers provide activities that encourage children to draw more often so they have the opportunity to increase their skills of observation.
4. Teachers use a variety of instructional methods in presenting drawing activities that include verbal, graphic and sensory stimulation.

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